

Pasture and Hayland Planting – 512

DESIGN AND INSTALLATION GUIDE

Pasture and Hayland Planting shall be planned and applied in accordance with the standard detailed in Section IV of the Field Office Technical Guide. This document provides conservation planners with additional parameters, recommendations, references, and requirements for developing site-specific plans for this practice.

1. Refer to ND Plant Materials Technical Note #14 for:

- Seeding dates (Part 1)
- Seedbed preparation (Part 2)
- Seeding equipment (Part 3)
- Drill calibration (Part 4)
- Seed requirements (Part 5)
- Seeding depth (Part 6)
- Cover and companion crops (Part 7)
- Management and protection during establishment (Part 8)
- Procedure for stand evaluation (Part 9)

2. Selecting Species and Varieties

- a. Determine the Pasture, Hayland, or Forage Suitability Group based on soils, from Section II-K of the Field Office Technical Guide.
- b. Refer to Table 1 or Forage Suitability Groups (FSG), if available, for Species Suitability of this specification for selecting species and developing mixtures for the appropriate Pasture and Hayland Suitability Group. Preferred species, indicated with the letter (G), will produce up to their genetic potential. Other suitable species indicated with the letter (F), are adapted but will not produce at their highest potential. A dash (-) indicates that the species is unsuited and shall not be recommended.
- c. Refer to ND Plant Materials Technical Note 14 for best-adapted varieties and full seeding rates of grasses, forbs and legumes. Use named varieties when available.
- d. Refer to Table 1 of this specification for mixture compatibility and allowable limits.

3. Planning Considerations

- a. Species planned for pasture or hayland should be compatible with the planned management of the entire operating unit. Select species that provide good forage for grazing or hay as appropriate. Consider all existing forages available on the operation when selecting the types of forages to be planted. Identify windows of time throughout the grazing or haying season when forage is lacking in quantity and quality. Next select species that are of high quality during the deficient period.
- b. For ease of management, mixtures should consist of grass, forb and/or legume species having similar growth habits, similar palatability during the intended period of use and similar seasons of growth. Refer to ND Plant Materials Technical Note 14 for species characteristics table.
- c. Caution should be used when mixing warm and cool-season species for pasture use. Warm/cool season mixtures should not be used for hayland. Growth periods and maturity are different which causes difficulty with management of stands. Consider using the Practice 550, Range Planting, for designing mixtures for a pasture that will be grazed during various periods throughout the growing season.
- d. Grass stand longevity and productivity can generally be improved with perennial legumes in the pasture and hayland mixture. As level of management increases on pasture, seeding mixture diversity may be increased. Consult NRCS area or state specialist for guidance in these situations.
- e. Pasture-type alfalfas should be used in pasture mixtures, since this type of alfalfa shows better survivability under grazing use. The land user should be aware of bloat hazard when legumes are included in pasture mixtures. There have been no cases of bloat reported when grazing stands of Cicer milkvetch and/or sainfoin.
- f. Where water erosion is a concern all operations and seeding should be performed across the general slope of the fields where appropriate.
- g. For improved germination, scarification of legumes with hard seed coats is recommended. Scarification is especially important with the following species: Cicer milkvetch, purple prairie clover, white prairie clover, leadplant, birdsfoot trefoil and Canada milkvetch.
- h. The landuser should be aware of potential toxicity to horses, sheep and goats when they are allowed to graze pure stands of switchgrass.
- i. Sodic-saline soils and saline soils should only be seeded into standing or flat residues and as a dormant seeding for cool-season species. Mulching is recommended for improved stand establishment on sodic-saline and saline soils when planting both cool-season and warm-season species.
- j. Slender wheatgrass, Dahurian and Canada wildrye are short-lived species, but establish rapidly and provide quick cover.
- k. Fertilization is not recommended during the establishment phase. Fertilization during the establishment phase tends to favor annual weeds over perennial forage species. For recommendations on management of established stands, refer to Section IV-511 Forage Harvest Management.

- I. On slopes greater than 9%, a minimum of 50% of the mixture must be rhizomatous species.

4. Pasture and Hayland Renovation

Pasture and hayland renovation has limited application in the state. Usually, a complete seedbed preparation and seeding operation is recommended.

Exceptions to this are:

- a. On soils with high erosion potential where the stand composition and/or vigor have deteriorated and a complete re-establishment is required: Areas where wind erosion is the concern, re-establishment should be done in narrow strips. Where water erosion is the concern, re-establishment should be done in narrow strips on the contour.
- b. Pasture or hayland that is low in vigor and production: fertilization and/or a light mechanical disturbance of the soil surface can improve these areas. For information on type, rate, and time of fertilizer application, use recommendations by North Dakota State University, Cooperative Extension Service <http://www.ext.nodak.edu/extpubs/soilfert.htm> (Circulars SF-721 and SF-728). For guidance on light mechanical disturbance, see ND Plant Materials Technical Note # 15 (pending).
- c. Pasture or hayland on which some of the desirable legume species have disappeared from the stand: These areas can be improved by treating the existing grass stand with mechanical or chemical treatments plus interseeding with the desired species. For guidance on interseeding, see ND Plant Materials Technical Note # 15 (pending).

5. Guidelines for stand evaluation

- a. Stands for forage production must have a minimum density of two rhizomatous grass plants per square foot, or four plants per square foot for bunchgrasses or mixtures of bunch and rhizomatous type grasses; or in the case of grass-legume mixtures, two grass plants and two legume plants per square foot.
- b. See Part 9 of ND Plant Materials Technical Note #14 for additional guidance on stand evaluation.

6. Established stand management

- a. Refer to Practice 528A, Prescribed Grazing, for management of established pasture plantings
- b. Refer to Practice 511, Forage Harvest Management, for management of established hayland plantings.

7. Documentation

- a. Use ND-CPA-9 (electronic or hardcopy) to document practice planning and installation.

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Table 1. MIXTURE COMPATABILITY AND ALLOWABLE LIMITS

Species		Mixture Compatibility ¹	Mixture % Min.- Max. ²	Growth Characteristics ³	Best Use ⁸
Introduced Cool-season Grasses					
Bromegrass					
	Meadow	D,H	30-100	B/M	Both
	Smooth	C,D	30-100	R/M	Both
Creeping foxtail		F	50-100	R/M	Both
Hard fescue		A,B,C,D	0-20	B/S	Pasture
Timothy ⁴		C,D,H	10-50	B/M	Both
Wheatgrass					
	Bluebunch-Quackgrass Hybrid	A,B,C,D,J	30-100	B/M	Both
	Crested	B	30-100	B/M	Both
	Intermediate	A,B,C,D,H	30-100	R/M	Both
	Pubescent	A,B,C,D,H	30-100	R/M	Both
	Siberian	B	30-100	R/M	Pasture
	Tall	J	30-100	B/T	Hay
Wildrye					
	Altai	E	80-100	B/M	Pasture
	Dahurian	A,B,C,D,E, K	0-20	B/M	Both
	Russian	E	80-100	B/M	Pasture
Native Cool-season Grasses					
Green needlegrass		G,H,N	10-100	B/M	Both
Reed canarygrass		F,R	50-100	R/T	Both
Wheatgrass					
	Slender	A,B,C,D,E,G,J,K,N	0-20	B/M	Both
	Western	A,B,C,G,H,J,N	10-100	R/M	Both
Wildrye					
	Basin	G,P	50-100	B/T	Pasture
	Beardless	J	10-50	R/M	Pasture
	Canada	A,B,C,D,G,J,K,N	0-20	B/M	Both
Native Warm-season Grasses ⁶					
Bluestem					
	Big	G,K	30-100	R/T	Both
	Little	G,K	10-50	B/M	Pasture
	Sand	G,K	30-100	R/T	Pasture
Grama					
	Blue	G,K	20-100	B/S	Pasture
	Sideoats	G,K	20-100	R/S	Pasture
Indiangrass		G,K	30-100	R/T	Pasture
Prairie cordgrass		G,K	10-100	R/T	Both
Prairie sandreed		G,K	30-100	R/T	Pasture
Switchgrass ⁵		G,H,K	30-100	R/T	Both

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Table 1. MIXTURE COMPATABILITY AND ALLOWABLE LIMITS - continued				
Species	Mixture Compatibility ¹	Mixture % Min.-Max. ²	Growth Characteristics ³	Best Use ⁸
Canada milkvetch	J,K,N,P	0-5	E/P	Both
Purple prairieclover	J,K,N,P	0-20	E/P	Pasture
White prairieclover	J,K,N,P	0-20	E/P	Pasture
Introduced Legumes ⁷				
Alfalfa	A,B,C,D,E,N,P	20-100	E/P	Both
Birdsfoot trefoil	A,B,C,D,E,N	20-100	P/P	Both
Cicer milkvetch	A,B,C,D,E,J,N,P	10-50	P/P	Both
Clover				
Alsike	F,J	10-50	P/P	Both
Ladino (white clover)	A,B,C,D,E,N,P	0-30	P/P	Both
Red ⁴	A,B,C,D,E,N,P	0-30	P/P	Both
Strawberry	J,P	0-30	E/P	Pasture
Sweet	A,B,C,D,E,J,N,P	0-10	E/B	Both
Hairy vetch	A,B,C,D,E,J,N,P	0-10	P/A	Both
Sainfoin	A,B,C,D,E,J,N,P	10-50	E/P	Both

¹ Based on compatibility of species and suitability groups, species with the same letter can be mixed.

² As level of grazing management increases, seeding mixture diversity may be increased. Consult area or state specialist for guidance with these situations.

³ R = Rhizomatous, B = Bunch, S = Short (<18"), M = Medium (18" to 36"), T = Tall (> 36"), A = Annual, B = Biennial, P = Perennial, E = Erect, P = Prostrate. See <http://plants.usda.gov/> for additional information.

⁴ Limited to MLRA 56.

⁵ Research indicates that pure stands of switchgrass may be toxic to horses, goats and sheep.

⁶ Warm season native grasses will not be mixed with introduced legumes due to competitive nature of the common introduced legumes.

⁷ On slopes greater than 9%, the seeding mixture will contain at least 50% rhizomatous species.

⁸ Indicates whether species is recommended for use as pasture, hayland or both. Based upon growth habit.

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SPECIES SUITABILITY
MLRA 55A & 56

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Introduced Grasses</u>																		
Bromegrass	Meadow	G	-	G	G	F	F	-	F	-	F	G	G	-	-	-	-	-
	Smooth	G	F	G	G	F	F	-	F	-	F	G	G	-	-	-	-	-
Creeping foxtail		-	-	F	-	F	-	-	-	-	G	-	-	-	-	-	-	-
Hard fescue		F	F	F	G	-	-	-	F	F	-	F	F	-	F	-	-	-
Timothy		F	-	G	G	-	-	-	-	-	F	F	F	-	-	-	-	-
Wheatgrass																		
	Bluebunch/ Quackgrass	G	F	G	G	G	G	F	F	-	-	F	G	F	F	F	G	G
	Hybrid																	
	Crested	-	F	-	-	-	F	-	G	F	-	-	-	-	F	-	-	-
	Intermediate	G	F	G	G	F	G	F	F	-	F	F	F	-	F	-	-	-
	Pubescent	G	F	G	G	F	G	F	F	-	F	F	F	-	F	-	-	-
Wildrye	Siberian	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tall	F	-	F	F	G	F	-	-	-	F	-	-	-	F	-	G	G
	Altai	G	-	G	G	-	-	-	-	-	-	F	F	-	-	-	F	F
	Dahurian	G	F	G	G	F	G	F	F	-	F	F	F	-	F	-	-	-
	Russian	G	F	G	G	-	F	F	-	-	-	F	G	-	-	-	F	F
<u>Native Cool Season Grasses</u>																		
Green needlegrass		G	F	G	G	-	F	-	-	F	-	G	G	-	F	-	-	-
Reed canarygrass		-	-	F	-	F	-	-	-	-	G	-	-	-	-	-	-	-
Wheatgrass																		
	Slender	G	F	G	G	G	G	F	G	F	F	G	G	-	F	-	F	F
	Western	G	F	G	G	F	F	G	F	F	F	G	G	-	G	F	G	G
Wildrye																		
	Beardless	-	-	-	-	-	-	-	-	-	F	-	-	-	-	-	F	G
	Canada	G	-	G	-	F	G	G	-	-	-	F	G	G	-	-	F	F

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SPECIES SUITABILITY MLRA 55A & 56 - continued		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
Species																		
<u>Native Warm Season Grasses</u>																		
Bluestem																		
	Big	G	-	G	G	G	F	-	-	-	G	F	F	-	-	-	-	-
	Little	-	G	-	-	G	F	F	G	F	-	-	-	-	-	-	-	-
	Sand	-	-	-	-	-	G	G	F	-	-	-	-	-	-	-	-	-
Gramma																		
	Blue	G	G	F	G	-	F	F	F	F	-	G	G	G	F	F	-	-
	Sideoats	F	G	G	-	-	F	F	F	-	-	F	F	-	-	-	-	-
Indiangrass		G	-	G	G	G	F	F	-	-	G	F	F	-	-	-	-	-
Prairie cordgrass		-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-	F
Prairie sandreed		-	G	-	-	-	G	G	F	-	-	-	-	-	-	-	-	-
Switchgrass		G	-	G	G	G	F	-	-	-	G	F	F	F	-	-	F	F
<u>Native Legumes</u>																		
American vetch		G	G	G	F	-	G	F	F	-	-	F	G	F	-	-	-	-
Canada milkvetch		G	F	G	F	F	F	-	-	-	-	F	F	F	-	-	-	-
Purple prairieclover		G	F	F	F	-	G	F	F	-	-	G	G	F	-	-	-	-
White prairieclover		G	F	F	F	-	G	G	G	F	-	G	G	G	-	-	-	-
<u>Introduced Legumes</u>																		
Alfalfa		G	F	G	F	F	G	G	G	F	F	G	G	-	F	-	-	-
Birdsfoot trefoil		F	-	G	F	G	F	-	-	-	F	F	F	-	-	-	-	-
Cicer milkvetch		G	-	G	F	F	G	F	-	-	-	F	G	F	-	-	-	-
Clover																		
	Alsike	-	-	F	-	F	-	-	-	-	G	-	-	-	-	-	F	F
	White	F	-	G	F	F	-	-	-	-	-	-	-	-	-	-	-	-
	Red	G	-	G	F	F	F	-	-	-	F	-	-	-	-	-	-	-
	Strawberry	G	-	-	-	-	-	-	-	-	F	-	-	-	-	-	F	G
	Sweet	G	F	G	G	G	G	F	G	F	F	G	G	-	F	-	F	F
Hairy vetch		G	F	G	-	F	F	-	-	-	-	F	F	F	F	-	F	-
Sainfoin		F	F	-	-	-	G	F	F	-	-	F	F	F	-	-	-	-

G - Good adaptation for forage production on this group of soils in this MLRA; **F**- Fair adaptation but will not produce at its highest potential

Natural Resources Conservation Service – North Dakota

**SPECIES SUITABILITY
MLRA 53A&B**

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Introduced Grasses</u>																		
Bromegrass																		
	Meadow	G	-	G	G	F	F	-	F	-	F	F	F	-	-	-	-	-
	Smooth	G	F	G	G	F	F	-	F	-	F	F	F	-	-	-	-	-
Creeping foxtail		-	-	F	-	F	-	-	-	-	F	-	-	-	-	-	F	F
Hard fescue		F	F	-	G	-	F	-	F	F	-	F	F	-	F	-	-	-
Timothy		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wheatgrass																		
	Bluebunch/Q	G	F	G	G	G	G	F	F	-	-	F	G	F	F	F	G	G
	uackgrass																	
	Hybrid																	
	Crested	F	G	F	G	-	F	-	G	F	-	G	G	F	F	-	-	-
	Intermediate	G	F	G	G	F	F	F	F	-	F	F	F	F	-	-	-	-
	Pubescent	G	F	G	G	F	F	F	F	-	F	F	F	F	-	-	-	-
	Siberian	F	G	-	-	-	F	G	G	F	-	F	F	F	-	-	-	-
	Tall	F	-	F	F	G	F	-	-	-	F	-	-	-	F	-	G	G
Wildrye																		
	Altai	G	-	G	G	-	F	-	-	-	-	F	F	-	-	-	F	F
	Dahurian	G	F	G	G	F	G	F	F	-	F	F	F	-	F	-	-	-
	Russian	G	-	G	G	-	F	-	-	-	-	F	F	-	-	-	F	F
<u>Native Cool Season Grasses</u>																		
Green needlegrass		G	F	G	G	-	F	-	-	-	-	G	G	F	F	-	-	-
Reed canarygrass		-	-	F	-	F	-	-	-	-	G	-	-	-	-	-	-	-
Wheatgrass																		
	Slender	G	F	G	G	G	G	F	G	F	G	G	G	F	G	F	G	G
	Western	G	F	G	G	F	F	-	G	F	F	G	G	F	G	F	G	G
Wildrye																		
	Basin	F	-	F	-	G	F	-	-	-	-	-	F	F	-	-	-	F
	Beardless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	G	G
	Canada	G	-	G	-	F	G	G	-	-	-	F	G	G	-	-	F	F

Natural Resources Conservation Service – North Dakota

SPECIES SUITABILITY MLRA 53A&B - continued

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Native Warm Season Grasses</u>																		
Bluestem	Big	G	-	G	F	G	F	-	-	-	G	F	F	F	-	-	-	-
	Little	F	G	F	F	G	G	G	G	F	-	F	F	F	-	-	-	-
	Sand	-	-	-	-	-	G	G	F	-	-	-	-	G	-	-	-	-
Grama	Blue	G	G	F	G	-	G	F	G	F	-	G	G	G	F	F	-	-
	Sideoats	F	G	G	F	-	G	F	F	-	-	F	F	F	-	-	-	-
Indiangrass		F	-	G	F	G	-	-	-	-	F	-	-	-	-	-	-	-
Prairie cordgrass		-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-	-
Prairie sandreed		-	G	-	-	-	G	G	F	-	-	-	-	F	-	-	-	-
Switchgrass		G	-	G	F	G	F	-	-	-	G	F	F	-	-	-	F	F
<u>Native Legumes</u>																		
American vetch		G	G	G	F	-	G	F	F	-	-	F	G	F	-	-	-	-
Canada milkvetch		G	F	G	F	F	F	-	-	-	-	F	F	F	-	-	-	-
Purple prairieclover		G	F	F	F	-	G	F	F	-	-	G	G	F	-	-	-	-
White prairieclover		G	F	F	F	-	G	G	G	F	-	G	G	G	-	-	-	-
<u>Introduced Legumes</u>																		
Alfalfa		G	F	G	F	G	G	G	G	F	F	G	G	F	F	-	-	-
Cicer milkvetch		G	-	G	F	F	G	F	-	-	-	F	G	F	-	-	-	-
Clover																		
	Alsike	-	-	F	-	F	-	-	-	-	G	-	-	-	-	-	F	F
	White	F	-	G	F	F	-	-	-	-	-	-	-	-	-	-	-	-
	Sweet	G	F	G	G	G	G	F	G	F	F	G	G	G	F	-	F	F
Hairy vetch		G	F	G	-	F	F	-	-	-	-	F	F	F	F	-	F	-
Sainfoin		F	F	-	-	-	G	F	F	-	-	F	F	F	-	-	-	-

G - Good adaptation for forage production on this group of soils in this MLRA
 F - Fair adaptation but will not produce at its highest potential

Natural Resources Conservation Service – North Dakota

SPECIES SUITABILITY **MLRA 55B**

species		Clayey Subsoil	Claypan	Droughty Loam	Limy Upland	Loam	Over flow	Saline	Sand	Shallow	Steep Loam	Subirri gated	Very Droughty Loam	Wet
<u>Introduced Grasses</u>														
Bromegrass														
	Meadow	G	-	G	F	G	G	-	G	-	G	G	-	F
	Smooth	G	F	G	-	G	G	-	F	F	G	G	F	-
Creeping foxtail		-	-	-	-	-	F	F	-	-	-	F	-	G
Hard fescue		G	F	-	F	F	F	-	-	F	F	-	F	-
Timothy		G	-	-	-	F	G	-	-	-	-	-	-	F
Wheatgrass														
	Bluebunch/ Quackgrass Hybrid	G	F	G	G	G	G	G	G	F	G	G	F	-
	Crested	G	F	G	G	G	G	-	F	F	G	-	F	-
	Intermediate	G	F	G	F	G	G	-	G	F	G	F	F	-
	Pubescent	G	F	G	F	G	G	-	G	F	G	F	F	-
	Siberian	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tall	G	G	G	-	G	G	G	F	-	G	G	-	-
Wildrye														
	Altai	F	-	F	-	F	F	F	F	-	F	F	-	-
	Dahurian	G	F	F	F	G	G	-	F	-	-	F	F	F
	Russian	G	F	G	F	G	G	F	F	F	G	-	F	-
<u>Native Cool Season Grasses</u>														
Green needlegrass		G	F	G	F	G	G	-	F	F	G	F	F	-
Reed canarygrass		-	-	-	-	-	F	-	-	-	-	G	-	G
Wheatgrass														
	Slender	G	F	G	F	G	G	G	F	F	G	G	F	-
	Western	G	G	G	F	G	G	G	F	F	G	G	F	F
Wildrye														
	Beardless	-	F	-	-	-	-	G	-	-	-	-	-	-
	Canada	-	-	F	-	F	G	F	G	-	F	F	-	-

Natural Resources Conservation Service – North Dakota

SPECIES SUITABILITY **MLRA 55B - continued**

species		Clayey Subsoil	Claypan	Droughty Loam	Limy Upland	Loam	Over flow	Saline	Sand	Shallow	Steep Loam	Subirri gated	Very Droughty Loam	Wet
<u>Native Warm</u>														
<u>Season Grasses</u>														
Bluestem														
	Big	G	-	F	F	G	G	-	F	-	F	G	-	-
	Little	F	-	G	G	G	G	-	G	F	G	G	F	-
	Sand	-	-	F	-	F	F	-	G	F	F	-	F	-
Grama														
	Blue	G	F	G	G	G	F	-	F	F	G	-	F	-
	Sideoats	F	-	G	G	G	G	-	F	F	G	-	F	-
Indiangrass		F	-	F	-	G	G	-	F	-	F	G	-	-
Prairie cordgrass		-	-	-	-	-	-	F	-	-	-	-	-	G
Prairie sandreed		-	-	F	F	F	-	-	G	F	F	-	F	-
Switchgrass		G	-	F	-	G	G	-	F	-	F	G	-	F
<u>Native Legumes</u>														
American vetch		F	-	F	G	G	G	-	F	-	F	-	F	-
Canada milkvetch		F	-	F	-	G	G	-	F	-	F	F	-	-
Purple prairieclover		-	-	G	G	G	F	-	G	G	G	-	G	-
White prairieclover		F	-	G	F	G	F	-	G	G	G	-	G	-
<u>Introduced</u>														
<u>Legumes</u>														
Alfalfa		G	F	G	F	G	G	-	F	-	G	F	-	-
Birdsfoot trefoil		F	-	F	-	F	G	F	-	-	F	G	-	-
Cicer milkvetch		F	-	G	-	G	G	-	G	-	G	F	-	-

Natural Resources Conservation Service – North Dakota

SPECIES SUITABILITY MLRA 55B - continued

species		Clayey Subsoil	Claypan	Droughty Loam	Limy Upland	Loam	Over flow	Saline	Sand	Shallow	Steep Loam	Subirri gated	Very Droughty Loam	Wet
Clover														
	Alsike	-	-	-	-	-	-	F	-	-	-	F	-	-
	White	G	-	-	-	G	G	-	-	-	-	F	-	-
	Red	G	-	F	-	G	G	-	-	-	F	-	-	-
	Strawberry	-	-	-	-	F	-	G	-	-	-	-	-	F
	Sweet	G	F	G	F	G	G	F	F	F	G	F	F	-
	Hairy vetch	F	F	F	F	G	G	-	-	-	-	F	-	-
Sainfoin		-	-	F	F	F	F	-	F	-	F	-	-	-

G - Good adaptation for forage production on this group of soils in this MLRA

F - Fair adaptation but will not produce at its highest potential

Natural Resources Conservation Service – North Dakota

**SPECIES SUITABILITY
MLRA 54**

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Introduced Grasses</u>																		
Bromegrass	Meadow	G	-	G	-	-	F	-	-	-	-	F	F	F	-	-	-	-
	Smooth	G	F	G	F	-	F	-	F	-	-	F	F	F	-	-	-	-
Creeping foxtail		-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	F	F
Hard fescue		F	F	-	G	-	-	-	F	F	-	F	F	F	F	-	-	-
Timothy		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wheatgrass																		
	Bluebunch/ Quackgrass Hybrid	G	F	G	G	-	G	F	F	-	-	F	G	F	F	F	G	G
	Crested	G	G	G	G	-	G	F	G	F	-	F	F	F	-	-	-	-
	Intermediate	G	F	G	F	-	F	F	F	-	-	F	F	F	F	-	-	-
	Pubescent	G	F	G	F	-	F	F	F	-	-	F	F	F	F	-	-	-
	Siberian	F	G	-	-	-	F	G	G	F	-	F	F	F	-	-	-	-
Wildrye	Tall	F	-	G	-	F	F	-	-	-	F	-	-	-	-	-	G	G
	Altai	G	F	G	F	-	F	-	-	-	-	F	F	F	-	-	F	F
	Dahurian	G	F	G	G	-	G	F	F	-	F	F	F	F	F	-	-	-
	Russian	G	F	G	F	-	G	F	F	-	-	F	F	F	F	-	F	F
<u>Native Cool Season Grasses</u>																		
Green needlegrass		G	-	G	G	G	G	-	-	-	-	G	F	F	F	-	-	-
Reed canarygrass		-	-	F	-	-	-	-	-	-	G	-	-	-	-	-	-	-
Wheatgrass																		
	Slender	G	F	G	G	-	F	F	F	-	G	G	G	F	F	F	G	G
Wildrye	Western	G	F	G	G	-	G	F	F	F	F	G	G	F	G	F	G	G
	Basin	F	-	F	-	-	F	-	-	-	-	-	F	F	-	-	-	F
	Beardless	-	-	-	-	-	-	-	-	-	-	-	-	-	F	-	G	G
	Canada	G	-	G	-	-	G	G	F	-	-	F	G	G	-	-	F	F

Natural Resources Conservation Service – North Dakota

SPECIES SUITABILITY

MLRA 54 - continued

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Native Warm Season Grasses</u>																		
Bluestem	Big	G	-	G	-	G	F	-	-	-	-	F	F	F	-	-	-	-
	Little	G	G	F	-	G	G	G	F	F	-	F	F	F	-	-	-	-
	Sand	-	-	F	-	-	G	G	F	-	-	-	F	G	-	-	-	-
Grama	Blue	G	G	F	G	-	G	F	G	F	-	G	G	G	F	F	-	-
	Sideoats	G	G	G	F	-	G	F	F	F	-	F	G	F	-	-	-	-
Indiangrass		-	-	F	-	F	-	-	-	-	F	-	-	-	-	-	-	-
Prairie cordgrass		-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-	-
Prairie sandreed		F	F	-	-	-	G	G	F	F	-	-	F	G	-	-	-	-
Switchgrass		G	-	G	F	G	F	-	-	-	G	F	-	-	-	-	F	F
<u>Native Legumes</u>																		
American vetch		G	G	G	F	F	G	F	F	-	-	F	G	F	-	-	-	-
Canada milkvetch		G	F	G	F	-	F	F	-	-	-	F	F	F	-	-	-	-
Purple prairieclover		G	F	F	F	-	G	F	F	-	-	-	G	F	-	-	-	-
White prairieclover		G	F	F	F	-	G	G	G	F	-	F	G	G	-	-	-	-
<u>Introduced Legumes</u>																		
Alfalfa		G	F	G	F	G	G	F	F	-	-	F	F	F	F	-	-	-
Cicer milkvetch		G	F	G	F	G	G	F	-	-	-	F	G	F	-	-	-	-
Clover	Alsike	-	-	-	-	-	-	-	-	-	F	-	-	-	-	-	F	F
	White	F	-	G	F	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sweet	G	F	G	G	F	G	F	G	F	F	G	G	F	F	-	F	F
Hairy vetch		G	F	G	-	F	F	-	-	-	-	F	F	F	F	-	F	-
Sainfoin		F	F	-	-	-	G	F	F	-	-	F	F	F	-	-	-	-

G - Good adaptation for forage production on this group of soils in this MLRA

F - Fair adaptation but will not produce at its highest potential

Natural Resources Conservation Service – North Dakota

**SPECIES SUITABILITY
MLRA 58C**

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Introduced Grasses</u>																		
Bromegrass																		
	Meadow	F	-	G	-	-	F	-	-	-	-	-	-	-	-	-	-	-
	Smooth	G	F	G	F	-	F	-	F	-	-	F	F	-	-	-	-	-
Creeping foxtail		-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-	-
Hard fescue		F	-	-	G	-	-	-	F	F	-	-	F	F	F	-	-	-
Wheatgrass																		
	Bluebunch/Q	G	F	G	-	-	G	F	F	-	-	-	G	F	F	-	G	G
	uackgrass																	
	Hybrid																	
	Crested	G	F	G	G	-	F	-	G	F	-	G	G	F	F	-	-	-
	Intermediate	G	-	G	F	-	F	F	F	-	-	F	F	F	-	-	-	-
	Pubescent	G	-	G	F	-	F	F	F	-	-	F	F	F	-	-	-	-
	Siberian	G	G	-	-	-	F	G	G	F	-	-	F	F	-	-	-	-
	Tall	F	-	F	-	-	-	-	-	-	F	-	-	-	-	-	G	G
Wildrye																		
	Altai	F	-	G	F	-	F	-	-	-	-	-	F	-	-	-	F	F
	Dahurian	G	F	G	G	-	G	F	F	-	F	F	F	F	F	-	-	-
	Russian	F	-	G	-	-	F	-	-	-	-	-	F	F	-	-	F	F
<u>Native Cool Season Grasses</u>																		
Green needlegrass		G	-	G	G	-	F	-	-	-	-	F	G	F	-	-	-	-
Reed canarygrass		-	-	F	-	-	-	-	-	-	G	-	-	-	-	-	-	-
Wheatgrass																		
	Slender	G	F	G	G	-	F	F	F	-	G	G	F	F	F	F	F	F
	Western	G	F	G	G	-	F	-	F	F	F	G	G	F	G	F	G	G
Wildrye																		
	Basin	F	-	F	-	-	F	-	-	-	-	-	F	F	-	-	-	F
	Beardless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	G	G
	Canada	G	-	G	-	-	G	G	-	-	-	-	G	G	-	-	F	F

Natural Resources Conservation Service – North Dakota

SPECIES SUITABILITY MLRA 58C- continued

Species		A1	A2	A3	A4	A5	A6	A7	B1	B2	C1	F1	F2	F3	G1	G2	G3	G4
<u>Native Warm Season Grasses</u>																		
Bluestem																		
	Big	G	-	G	-	-	F	-	-	-	F	F	-	-	-	-	-	-
	Little	F	G	-	-	-	F	F	F	F	-	F	G	F	-	-	-	-
	Sand	-	-	F	-	-	G	G	F	-	-	-	-	F	-	-	-	-
Grama																		
	Blue	G	G	F	G	-	F	F	F	F	-	G	G	G	F	F	-	-
	Sideoats	G	G	F	F	-	F	-	F	-	-	F	F	F	-	-	-	-
Indiangrass		-	-	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prairie cordgrass		-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-	-
Prairie sandreed		-	-	-	-	-	G	G	F	-	-	-	-	G	-	-	-	-
Switchgrass		F	-	G	-	-	-	-	-	-	G	-	-	-	-	-	F	F
<u>Native Legumes</u>																		
American vetch		G	G	G	F	-	G	F	F	-	-	F	G	F	-	-	-	-
Canada milkvetch		G	F	G	F	-	F	-	-	-	-	F	F	F	-	-	-	-
Purple prairieclover		G	F	F	F	-	G	F	F	-	-	G	G	F	-	-	-	-
White prairieclover		G	F	F	F	-	G	G	G	F	-	F	G	G	-	-	-	-
<u>Introduced Legumes</u>																		
Alfalfa		G	-	G	F	-	F	-	F	-	-	F	F	F	F	-	-	-
Cicer milkvetch		G	-	G	F	-	G	F	-	-	-	F	G	F	-	-	-	-
Clover																		
	Alsike	-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	F	F
	White	F	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sweet	G	-	G	G	-	G	F	G	F	F	F	G	F	F	F	F	F
Hairy vetch		G	F	G	-	F	F	-	-	-	-	F	F	F	F	-	F	-
Sainfoin		F	F	-	-	-	G	F	F	-	-	F	F	F	-	-	-	-

G – Good adaptation for forage production on this group of soils in this MLRA

F - Fair adaptation but will not produce at its highest potential